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EXAMINER	
RALEIGH, DONALD L	

ART UNIT	PAPER NUMBER
2879	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,248	ROTH ET AL.	
	Examiner	Art Unit	
	DONALD L. RALEIGH	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,11-18 and 26-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,11-18 and 26-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 October 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/16/2005,08/24/2006,09/22/2006,05/07,2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Claims 1-3, 11-18 and 26-30 in the reply filed on September 03, 2008 is acknowledged.

Claim Rejections - 35 USC § 112

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, it is not clear if applicant intends to claim a Markush group. If so, appropriate language is required. Furthermore, in Claim 1,in the limitation of " a light emitting component prepared from a manganese(IV)-activated antimonate, a titanate, silicate-germanate, and an aluminate" , is not clear if applicant intends for the limitation to include any one of the antimonate, titanate, germanate and aluminate or if all four limitations are required to satisfy the claim.

For purposes of examination, examiner assumes that applicant is most likely claiming only one of the four limitations.

Furthermore, in Claim 1, the limitations of "a light emitting component prepared from a manganese (IV)-activated antimonate, a titanate, silicate germanate, and an aluminate, a light emitting component prepared from a europium-activated silicate-germanate", it is not clear if applicant is claiming two primary activators manganese(IV)-activated antimonate and europium-activated silicate germanate or just one of the two.

For purposes of examination, examiner assumes that applicant is most likely claiming only one of the two activators.

Also, in claim 1, the limitation in the preamble, "having a high level of color rendering properties" is not clearly defined in the specification.

In Claim 2, the limitation “and a part of antimony (Sb) may be replaced” is indefinite, as it may also not be replaced. Furthermore, in the same claim, the limitation “alternatively may contain a system” is also indefinite, as it may also not contain a system.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Wanmaker et al (US Patent No. 3,925,239).

Regarding Claim 1,Wanmaker discloses a phosphor (Column 1, line 2 (luminescent)) for converting ultraviolet light or blue light emitted from a light emitting element into a visible white radiation(Column 1, lines 12-14) having a very high level of color rendering properties, said phosphor being characterized by comprising a light emitting component (luminescent) prepared from a solid system of an alkaline earth metal antimonate (abstract, lines 14-17) and a system derived from the solid system

exhibiting intrinsic photoemission, such as a fluoroantimonate (Column 1, line 20 (fluorine is added).

Regarding Claim 2, Wanmaker discloses a phosphor for converting ultraviolet or blue light emitted from the light emitting element to a visible white radiation(Column 1, lines 12-14) having a very high level of color rendering properties, characterized by comprising a light emitting alkaline earth metal antimonate (abstract, lines 14-17) represented by general formula $Me^{I}_{x}Me^{II}_{y}Sb_aO_bX_c$

wherein

Me^{I} is at least one element selected from the group consisting of calcium (Ca)(Column 1, line 48),(Note also, that lowercase x in the range claimed below may be zero which would indicate that Me^{I} is not present in the phosphor).

Me^{II} is at least one element selected from the group consisting of lithium (Li), sodium (Na), potassium (K), rubidium (Rb), and cesium (Cs),

(y is allowed to be zero in the ranges below. In such case, none of the above would be present as disclosed by Wanmaker.)

X (uppercase letter) represents at least one element selected from the group consisting of fluorine (F),(column 1, lines 20-21).

x (lowercase letter) = 0 (zero) to 8,

y=0 to 4, $0 < a < 16$, $0 < b < 64$, $0 \leq c \leq 4$,

and a part of antimony (Sb) may be replaced with vanadium (V), niobium (Nb), tantalum (Ta), phosphorus (P), arsenic (As), titanium (Ti), zirconium (Zr), hafnium (Hf),

silicon (Si), germanium (Ge), molybdenum (Mo), or tungsten (W), or alternatively may contain a system derived from them, for example, a fluoroantimonate.
Examiner Note: The limitations" may be replaced" and "alternatively may contain" are indefinite and are addressed in the 35 USC 112 rejection above.

Regarding Claim 3, Wanmaker discloses the optical device (Column 1, lines 12-15 (discharge lamps) characterized in that said wavelength converting part (phosphor) comprises a phosphor comprising an alkaline earth metal antimonate (abstract, lines 12-17) which exhibits intrinsic photoemission and emits light in a red spectrum region with a maximum emission wavelength of about 600 to 670 nm (Column 1, lines 12-14 discloses that it emits visible light (400-700nm) which includes (a maximum of about 670 nm).

Regarding Claim 12, Wanmaker discloses a phosphor for converting ultraviolet or blue light emitted from the light emitting element to a visible white radiation (Column 1, lines 12-14) having a very high level of color rendering properties, characterized in that said phosphor is applied, either solely or as a mixture of other phosphor, as a layer in a light emitting element (Column 1, lines 12-16 (discharge lamps) and white light (Column 1, line 14 (visible radiation) with color rendering Ia (all light emitters have a color rendering index) is produced by a combination of a primary radiation emitted from said light emitting element (discharge lamp) with a radiation emitted from the layer of the phosphor.(Column 1, lines 6-16 teaches that the luminescent material is added to the lamp which emits light).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11, 13-15, 17-18, 26, and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wanmaker(239) in view of Taskar et al (US Patent No.6,734,465).

Regarding Claim 11, Wanmaker fails to exemplify a phosphor having a color rendering index Ra > 90 is produced by a combination of a radiation emitted from the phosphor with a primary radiation emitted from a light emitting element ; capable of constituting a semiconductor element or a gas discharge lamp and, thus, this element can be used as a background illumination device and in lighting in a living space and furnishings, in photography and microscopic examination, in medical technology, and in lighting technology in museums and any place where a very authentic color rendering is important.

Taskar teaches a phosphor for converting ultraviolet or blue light emitted from the light emitting element to a visible white radiation (Column 1, lines 56-59) having a very high level of color rendering properties, characterized in that white light having color rendering Ia and a color rendering index Ra > 90 (Column 1, lines 60-61) is produced by a combination of a radiation emitted from the phosphor (Column 1, line 59) with a primary radiation emitted from a light emitting element (LED) (Column 1, line 57).

capable of constituting a semiconductor element (LED)(Column 1, line 57) or a gas discharge lamp

and, thus, this element can be used as a background illumination device and in lighting in a living space and furnishings, in photography and microscopic examination, in medical technology, and in lighting technology in museums and any place where a very authentic color rendering is important.

It is to be noted that Taskar meets all the structure limitations of the claim. The limitation " this element can be used as a background illumination device and in lighting in a living space and furnishings, in photography and microscopic examination, in medical technology, and in lighting technology in museums and any place where a very authentic color rendering is important." is a statement of intended use.

The following is a quotation of the MPEP 2114

APPARATUS CLAIMS MUST BE STRUCTURALLY DISTINGUISHABLE FROM THE PRIOR ART

>While features of an apparatus may be recited either structurally or functionally, claims< directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. >In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429,1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971);< In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

Regarding Claim 13, Wanmaker discloses a phosphor for converting ultraviolet or blue light emitted from the light emitting element to a visible white radiation(Column 1, lines 12-14)

Wanmaker fails to disclose the phosphor having a very high level of color rendering properties, characterized in that said light emitting element used is LED for emitting a primary radiation in an ultraviolet spectrum region with more than 300 nm or a violet or blue spectrum region with more than 380 nm.

Taskar teaches in Column 1, the phosphor (line 59) having a very high level of color rendering properties (line 60 (90 or higher)), characterized in that said light emitting element used is LED (line 57) for emitting a primary radiation in an ultraviolet spectrum region (line 58) with more than 300 nm (line 59) or a violet or blue spectrum region with more than 380 nm (line 59) to produce high quality light at low cost and minimum degradation (Column 1, lines 60-65).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the phosphor , as taught by Taskar, to produce high quality light at low cost and minimum degradation.

Regarding Claim 14, Wanmaker discloses a phosphor capable of emitting light, characterized in that said wavelength converting part (phosphor) comprises a light emitting component prepared from a solid system of an alkaline earth metal antimonate (abstract, lines 14-17) and a system derived from the solid system exhibiting intrinsic photoemission, such as a fluoroantimonate (Column 1, line 20 (fluorine is added).

Wanmaker fails to disclose capable of emitting light excited based on light emitted from an LED element.

Taskar teaches at least in Figure 2, an optical device (LED) comprising a wavelength converting part (Column 1, lines 57-59, (phosphor)), said wavelength

converting part comprising a phosphor capable of emitting light excited based on light emitted from an LED element (Column 1, line 60)to produce high quality light at low cost and minimum degradation (Column 1, lines 60-65).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the phosphor , as taught by Taskar, to produce high quality light at low cost and minimum degradation.

Regarding Claim 15, Wanmaker discloses a light emitting component prepared from a solid system of an alkaline earth metal antimonate (Column 1, lines 19-22) and a system derived from the solid system exhibiting intrinsic photoemission, such as a fluoroantimonate (Column 1, line 20)(fluorine is added).

Wanmaker fails to disclose an optical device characterized by comprising an LED element, a power feeding part for mounting said LED element thereon and feeding power to said LED element, a light transparent sealing part for sealing said LED element and said power feeding part integrally with each other, and a wavelength converting part for emitting light upon excitation based on light emitted from said LED element, said wavelength converting part comprising a light emitting component.

Taskar teaches in Figure 2, an optical device characterized by comprising an LED element (Column 5, line 66), a power feeding part (12)(Column 5, lines 66-67) for mounting said LED element thereon and feeding power to said LED element, a light transparent sealing part (14) for sealing said LED element and said power feeding part integrally with each other, and a wavelength converting part (13) (Also, see Column 6, lines 4-6) for emitting light upon excitation (Column 5, line 62) based on light emitted

from said LED element, said wavelength converting part comprising a light emitting component (13) to produce high quality light at low cost and minimum degradation (Column 1, lines 60-65).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the phosphor , as taught by Taskar, to produce high quality light at low cost and minimum degradation.

Regarding Claim 17, Wanmaker discloses an optical device (Column 1, lines 12-15 (discharge lamps) said wavelength converting part (Column 1, lines 12-14) comprises a phosphor, said phosphor comprising a light emitting alkaline earth metal antimonate (Column 1, lines 19-22) represented by general formula $Me^{I}_{x}Me^{II}_{y}Sb_aO_bX_c$ wherein

Me^{I} is at least one element selected from the group consisting of calcium (Ca)(Column 1, line 48. Note also, that lowercase x in the range claimed may be zero which would indicate that Me is not present in the phosphor).

Me^{II} is at least one element selected from the group consisting of lithium (Li), sodium (Na), potassium (K), rubidium (Rb), and cesium (Cs),(y is allowed to be zero. In such case, none of the above elements would be present as disclosed by Wanmaker). X (uppercase letter) represents at least one element selected from the group consisting of fluorine (F)(Column 1, lines 20-21),

x (lowercase letter) = 0 (zero) to 8, y=0 to 4, $0 < a < 16$, $0 < b < 64$, $0 \leq c \leq 4$, and a part of antimony (Sb) may be replaced with vanadium (V), niobium (Nb), tantalum (Ya), phosphorus (P), arsenic (As), titanium (Yi), zirconium (Zr), hafnium (Hf),

silicon (Si), germanium (Ge), molybdenum (Mo), or tungsten (W), or alternatively may contain a system derived from them, for example, a fluoroantimonate.
Examiner Note: The limitations" may be replaced" and "alternatively may contain" are indefinite and are addressed in the 35 USC 112 rejection above.

Regarding Claim 18, Wanmaker discloses the optical device (Column 1, lines 12-15 (discharge lamps) characterized in that said wavelength converting part (phosphor) comprises a phosphor comprising an alkaline earth metal antimonate (abstract, lines 12-17) which exhibits intrinsic photoemission and emits light in a red spectrum region with a maximum emission wavelength of about 600 to 670 nm (Column 1, lines 12-14 discloses that it emits visible light (400-700nm) which includes (a maximum of about 670 nm).

Regarding Claim 26, Wanmaker fails to exemplify the optical device characterized in that said wavelength converting part is included in said light transparent sealing resin for sealing said LED element.

Taskar teaches, at least in Figure 3, the optical device (LED) characterized in that said wavelength converting part (13) is included in said light transparent sealing resin (14) for sealing said LED element (Column 6, lines 4-6) as an obvious attempt to encapsulate the device to protect from moisture and degradation.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the sealing resin, as taught by Taskar, with the phosphor of Wanmaker, to protect the device from moisture and degradation.

Regarding Claim 29, Wanmaker fails to exemplify the optical device characterized in that said wavelength converting part is provided on a surface of the sealing resin having an optical shape that radiates light emitted from said LED element in a desired lighting area.

Taskar, at least in Figure 2, teaches the optical device (LED) characterized in that said wavelength converting part (13) is provided on a surface of the sealing resin (Since the sealing resin goes over it, the element (13) is on the bottom surface of the sealing resin) having an optical shape that radiates light emitted from said LED element in a desired lighting area.(Figure 2, top left, shows a phosphor layer (13) conforming in shape to the sealing resin (14) to effectively radiate light in a desired area as defined by angled wings of the LED support).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the shape of the wavelength converting part to the shape of the sealing resin, as taught by Taskar, to effectively radiate light in a desired area as defined by angled wings of the LED support).

Regarding Claim 30, Wanmaker fails to disclose in that said wavelength converting part is excited upon exposure to blue light and/or ultraviolet light with wavelengths ranging from 300 nm to 500 nm.

Taskar teaches, at least in Figure 2, the optical device (LED) characterized in that said wavelength converting part (phosphor) is excited upon exposure to blue light and/or ultraviolet light with wavelengths ranging from 300 nm to 500 nm (Column 1,

lines 57-60) to produce high quality light at low cost and minimum degradation (Column 1, lines 60-65).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the phosphor , as taught by Taskar, to produce high quality light at low cost and minimum degradation.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wanmaker (239) in view of Pelka et al (US PG Pub. No. 2003/0085642).

Regarding Claim 16. Wanmaker discloses a wavelength converting part (phosphor) comprising a light emitting component prepared from a solid system of an alkaline earth metal antimonate (Column 1, lines 19-22) and a system derived from the solid system exhibiting intrinsic photoemission, such as a fluoroantimonate (Column 1, line 20)

Wanmaker fails to disclose an optical device characterized by comprising an LED lamp, a light guiding part for guiding light emitted from said LED lamp, a wavelength converting part for emitting light upon excitation based on light guided through said light guiding part,

Pelka teaches in figure 1, an optical device characterized by comprising an LED lamp (Paragraph [0042], line 20) , a light guiding part (4)(Paragraph [0052], lines 10-11) for guiding light emitted from said LED lamp, a wavelength converting part (Paragraph [0042], lines 18-22) or emitting light upon excitation based on light guided through said light guiding part (4) so that the light is emitted from the collector at an angle that will

satisfy the conditions for waveguide propagation within the collector (Column 43, lines 8-10).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the light guide and LED , as taught by Pelka, with the phosphor of Wanmaker, so that the light is emitted from the collector at an angle that will satisfy the conditions for waveguide propagation within the collector

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wanmaker (239) in view of Taskar (465) and further in view of Yoo (US PG Pub. No. 2004/0169181).

Regarding Claim 27, Wanmaker fails to exemplify the optical device characterized in that said phosphor is a thin-film phosphor layer that is sealed with said light transparent glass.

Taskar teaches, at least in Figure 3, a phosphor (13) that is included in a light transparent resin (14) for sealing said LED element (Column 6, lines 4-6).

Furthermore, Yoo teaches in at least figures 6-8, the optical device (title) characterized in that said phosphor is a thin-film phosphor layer (Paragraph [0043], line 1) that is sealed with said light transparent glass (Paragraph [0047], line 1 (encapsulated)). The film layer is provided as an obvious means of providing an economy of materials and labor. Since the material is deposited via CVD (Paragraph [0044], lines 1-2, the thin film will save time in the process.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the thin film phosphor layer, as taught by Yoo, and seal it with transparent resin, as taught by Yoo, using the phosphor material of Wanmaker, as an obvious means of providing an economy of materials and labor.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wanmaker (239) in view of Taskar (465) and further in view of Duggal et al (US Patent No. 6,700,322).

Regarding Claim 28, Wanmaker, as modified by Taskar, fails to disclose the optical device characterized in that said phosphor layer is planar.

Duggal teaches in Figures 1-3, the optical device (OLED) characterized in that said phosphor layer is planar (Column 7, lines 65-67) in order to provide uniformity in light output over the area of the light source (Column 1, lines 55-60).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the planar phosphor layer properties, as taught by Duggal, in the phosphor layer of Wanmaker, as modified by Taskar, in order to provide uniformity in light output over the area of the light source.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DONALD L. RALEIGH whose telephone number is

(571)270-3407. The examiner can normally be reached on Monday-Friday 7:30AM to 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Donald L Raleigh/
Examiner, Art Unit 2879

/Sikha Roy/
Primary Examiner, Art Unit 2879